

# PATENT COOPERATION TREATY



From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

**WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY  
EXAMINING AUTHORITY**

(PCT Rule 66)

To:  
JIN, Yong Suk

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Applicant's or agent's file reference <b>SB05-02</b>		Date of mailing (day/month/year) <b>23 MARCH 2006 (23.03.2006)</b>
International application No. <b>PCT/KR2005/000036</b>	International filing date (day/month/year) <b>07 JANUARY 2005 (07.01.2005)</b>	Priority date(day/month/year) <b>17 MARCH 2004 (17.03.2004)</b>
International Patent Classification (IPC) or both national classification and IPC <b>H01L 33/00(2006.01)</b>		
Applicant <b>OPTOWAY, Inc. et al</b>		

1. ☒ The written opinion established by the International Searching Authority :  
     ☒ is                                      ☐ is not  
     considered to be a written opinion of the International Preliminary Examining Authority.

2. This second (first, etc.) opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

    When ? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

    How ? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

    Also For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6. For an additional opportunity to submit amendments, see Rule 66.4.

    If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: **07 JULY 2006 (07.07.2006)**

Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer HWANG, Yun Koo Telephone No. 82-42-481-5165
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Form PCT/IPEA/408 (cover sheet) (April 2005)

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Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which was filed, unless otherwise indicated under this item.
- ☐ This opinion is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this opinion has been established on the basis of (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."):
- ☐ the international application as originally filed
- ☒ the description:
- pages 1-10 \_\_\_\_\_, as originally filed/furnished
- pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages 11-12 \_\_\_\_\_, as originally filed/furnished
- pages \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 4/5 \_\_\_\_\_, as originally filed/furnished
- pages 1/5-3/5, 5/5 \_\_\_\_\_ received by this Authority on January 13, 2006
- pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (specify): \_\_\_\_\_
4. ☒ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☒ the drawings, sheet/fig 2-4, 6-9, 12 \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (specify): \_\_\_\_\_

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**Box No. V Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	1-16	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	7-16	YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims	NONE	NO

**2. Citations and explanations :**

(1) The documents cited in the International Search Report:

D1 : US 2001/0048113 A1    D2 : US 6504180 B1  
D3 : US 2003/0062530 A1    D4 : KR 2005-0003671 A

(2) Inventive Step

The subject-matter of claims 1-6 is about an LED device in which an ultra-fine prominence and depression structure is provided on a part of the p-type or n-type semiconductor layer.

But, D1 discloses a surface-emitting light-emitting diode having increased light emission characteristics. The surface-emitting light-emitting in D1 includes a substrate, an active layer, an upper and a lower clad layer formed on and below the active layer respectively, a lower contact layer, and an upper contact layer formed on the light generating layer and having an uneven surface portion. (The abstract, figures 1-3 and claim 1). And the shape of the uneven surface is also described in D1. According to D1, the light is condensed by the uneven surface portion formed on the p-type semiconductor layer and thus the amount of light which is totally reflected internally is reduced.

In addition, D2 discloses a light emitting device having a waveguide surface structure extending in two dimensions and having a roughened surface structure (122 in figure 12) with a random grating structure.

As mentioned above, the features of claims 1-6 are included among the several straightforward possibilities or combinations from which a skilled person could select without an exercise of the inventive skill.

Therefore, the subject matter of claims 1-6 lacks an inventive step under PCT Article 33(3).

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**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

The drawings of figures 2-4 and 6-8 are not clear.

They are not properly explaining the invention nor concinced to the description of the invention.

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

**BOX I.**

This amendment which was filed on January 13, 2006 goes beyond the disclosure in the international application as filed.  
Therefore, this is considered to violate PCT Article 34.

**BOX V.**

However, the technical features of claims 7-16 of this application are not disclosed in D1 nor in D2, so it is believed that the subject matter of claims 7-16 has an inventive step under PCT Article 33(3).

**(3) Industrial Applicability**

The present application is believed to be industrially applicable according to PCT Article 33(4).